

**WHAT IS CLAIMED IS:**

1. A device comprising:  
a textile substrate having a first surface;  
5 a coating on the first surface of said textile substrate, said coating  
including a cationic material and a repellant finish.
2. The device according to Claim 1, wherein the cationic material of said  
coating comprises a material selected from the group consisting of: polymeric  
10 and non-polymeric organic compounds.
3. The device according to claim 2, wherein the cationic material of said  
coating comprises a nitrogen containing material.
- 15 4. The device according to Claim 3, wherein the nitrogen containing  
material is selected from the group consisting of: primary amine, secondary  
amine, tertiary amine, and quaternary amine.
5. The device according to Claim 3, wherein the nitrogen containing  
20 material includes amines converted to cationic amines under acidic  
conditions.
6. The device according to Claim 3, wherein the nitrogen containing  
material comprises a primary amine selected from the group consisting of:  
25 polyvinylamine and polyallylamine.
7. The device according to Claim 3, wherein the nitrogen containing  
material comprises homopolymers of cationic monomers.

8. The device according to Claim 7, wherein said cationic monomers includes material selected from the group of diallyldimethylammonium chloride and methacrylamidopropyltrimethyl ammonium chloride.

5 9. The device according to Claim 3, wherein the nitrogen containing material comprises copolymers of cationic monomers.

10 10. The device according to Claim 9, wherein said cationic monomers includes material selected from the group of diallyldimethylammonium chloride and methacrylamidopropyltrimethyl ammonium chloride.

11. The device according to Claim 2, wherein the cationic material of said coating comprises a phosphorus cationic material.

15 12. The device according to Claim 11, wherein the phosphorus cationic material comprises phosphonium.

13. The device according to Claim 2, wherein the cationic material comprises a metal salt material.

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14. The device according to Claim 13, wherein the metal salt material comprises a water soluble salt of cations selected from the group of the periodic table consisting of: Group II, Group III, and the Transition Metals.

25 15. The device according to Claim 13, wherein the metal salt material comprises a water soluble salt of cations selected from the group of cations consisting of: magnesium, calcium, aluminum, zinc, and zirconium.

30 16. The device according to Claim 13, wherein the metal salt material include an anion of a weak acid.

17. The device according to Claim 2, wherein the cationic material comprises a quaternary polymer and a multivalent metal salt.

18. The device according to Claim 1, wherein the repellant finish of said  
5 coating includes a repellant material selected from the group consisting of: a fluorochemical; a silicon; a resin-based finish; a wax; a wax-metal emulsion, and an organometallic complex.

19. The device according to Claim 18, wherein said repellant finish  
10 comprises a copolymer of perfluoroalkyl acrylate.

20. The device according to Claim 19, wherein said repellant finish further includes comonomers.

21. The device according to Claim 20, wherein said additional  
15 comonomers include esters of acrylic or methacrylic acid containing material selected from the group consisting of: alkyl groups, alkylamide groups, and polyether groups.

22. The device according to Claim 12, wherein said repellant finish  
20 comprises a copolymer of methacrylate.

23. The device according to Claim 22, wherein said repellant finish further  
includes comonomers.

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24. The device according to Claim 23, wherein said additional  
comonomers include esters of acrylic or methacrylic acid containing material  
selected from the group consisting of: alkyl groups, alkylamide groups, and  
polyether groups.

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25. The device according to Claim 1, wherein said repellant finish includes polymers of methyl(hydrogen)siloxane.

5 26. The device according to Claim 1, wherein said repellant finish includes polymers of dimethylsiloxane.

27. The device according to Claim 1, further including an image disposed on the first surface of said textile having the coating thereon.

10 28. The device according to Claim 27, wherein the image disposed on said textile comprises a colorant selected from the group consisting of: dyes, pigments, and polymeric colorants.

15 29. The device according to Claim 1, wherein said textile comprises a woven fabric.

20 30. The device according to Claim 29, wherein the woven fabric is selected from the group consisting of: satin weave fabrics, poplin weave fabrics, and crepe weave fabrics.

31. The device according to Claim 29, wherein said woven fabric includes from about 15 picks per inch to about 75 picks per inch.

25 32. The device according to Claim 29, wherein said woven fabric includes from about 15 ends per inch to about 175 ends per inch.

33. The device according to Claim 1, wherein said textile comprises a knit fabric.

34. The device according to Claim 33, wherein the knit fabric is selected from the group consisting of: circular knit fabrics, warp knit fabrics, and warp knit fabrics having a microdenier face for the first surface.

5 35. The device according to Claim 33, wherein said knit fabric comprises a warp knit fabric having from about 12 wales per inch to about 50 wales per inch.

10 36. The device according to Claim 33, wherein said knit fabric comprises a warp knit fabric having from about 12 courses per inch to about 50 courses per inch.

15 37. The device according to Claim 1, wherein said textile comprises a nonwoven material.

38. The device according to Claim 1, wherein said textile comprises a tufted material.

20 39. The device according to Claim 1, wherein said textile includes fibers selected from the group consisting of: polyester, nylon, wool, and acrylic.

40. The device according to Claim 1, wherein said textile comprises a sign fabric.

25 41. The device according to Claim 1, wherein said textile comprises a upholstery fabric.

30 42. The device according to Claim 1, wherein said textile comprises a drapery fabric.

44. The device according to Claim 1, wherein said textile comprises  
5 carpeting.

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15     47.     The device according to Claim 45, further including an image disposed  
on the first surface of said textile having the coating thereon.

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25 50. The device according to Claim 49, wherein the woven fabric is selected from the group consisting of: satin weave fabrics, poplin weave fabrics, and crepe weave fabrics.

51. The device according to Claim 49, wherein said woven fabric includes  
30 from about 15 picks per inch to about 75 picks per inch.

Figure 1 consists of 12 sub-graphs labeled (a) through (l), each showing the growth of *E. coli* O157:H7 in ground beef under different treatment conditions. The y-axis for all graphs is  $\log_{10}$  CFU/g, ranging from 0 to 10. The x-axis is time in hours, ranging from 0 to 24. The graphs show various growth curves, with some treatments showing significant inhibition of growth compared to the control.

5 53. The device according to Claim 45, wherein said textile comprises a knit fabric.

55. The device according to Claim 53, wherein said knit fabric comprises a warp knit fabric having from about 12 wales per inch to about 50 wales per inch.

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56. The device according to Claim 53, wherein said knit fabric comprises a warp knit fabric having from about 12 courses per inch to about 50 courses per inch.

20 57. The device according to Claim 45, wherein said textile comprises a  
nonwoven material.

58. The device according to Claim 45, wherein said textile comprises a tufted material.

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59. The device according to Claim 45, wherein said textile includes fibers selected from the group consisting of: polyester, nylon, wool, and acrylic.

60. The device according to Claim 45, wherein said textile comprises a  
30 sign fabric.

[illegible]

61. The device according to Claim 45, wherein said textile comprises a upholstery fabric.

5 62. The device according to Claim 45, wherein said textile comprises a drapery fabric.

63. The device according to Claim 45, wherein said textile comprises a napery fabric.

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64. The device according to Claim 45, wherein said textile comprises carpeting.

65. A method comprising the steps of:

15 applying a coating to at least a first side of a textile, said coating having cationic and repellant properties;  
applying an image to the first side of the textile with the coating thereon.

20 66. The method according to Claim 65, wherein said step of applying a coating includes applying the coating to the textile in an aqueous form.

25 67. The method according to Claim 66, wherein said step of applying the coating further includes dipping the textile into the aqueous form of the coating.

68. The method according to Claim 66, further including the step of squeezing the textile between rollers after the step of applying the coating and prior to the step of applying the image.

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5 70. The method according to Claim 65, wherein said step of applying the image includes applying the image with digital printing.

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73. A device comprising a textile with an image thereon, the image having  
15 a color intensity of greater than 60.7 for the color red.

20 75. A device comprising a textile with an image thereon, the image having  
a color intensity of greater than 56.3 for the color blue.

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